Highland Valley Copper Tailings Dams Geotechnical Design and Construction

Geographical location

17 km west of Logan Lake, British Columbia

When it began or was completed

Construction for the Highland Valley Copper mine began in 1969. The tailings impoundment starter dam was completed in 1977. Currently the L-L Dam is approximately 170 m high, and H-H Dam is approximately 90 m high, with dam raises still occurring.

Why a Canadian geotechnical achievement?

The Highland Valley Copper tailings dams were among the first engineered centerline cyclone sand tailings dams in the world. These dams met the needs of high tonnage mining in BC and throughout the world in the 1970s and 1980s. The dam design and construction techniques developed at Highland Valley Copper still serve the needs of large scale mining, and continue to evolve to meet modern national and international tailings dam design guidelines.

The original design, inspired by Earl Klohn, was for a 107 m high H-H Dam and a 166 m high L-L Dam, and is still the basis for the current design. The design has proven to be robust enough to accommodate a complex assemblage of competent till and weak soft lacustrine foundation deposits. New seismic design methods developed by Robert Lo, in collaboration with Liam Finn of the University of British Columbia and others, have been incorporated to manage the developing understanding of the tectonic regime of the Interior of BC.

Lessons learned and geotechnical techniques developed at the dams have advanced both dam design and the international reputation of Canada's geotechnical capabilities.

Highland Valley Copper, one of the world's major copper mines, is currently owned by Teck Resources.

Submitted by

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Key Reference

Scott, MD, Klohn, EJ, Lo, RC and Lum, KK. 1988. **Overview of Highland Valley Tailings Storage Facility.** Proceedings, Second International Conference on Case Histories in Geotechnical Engineering, St. Louis, MO, USA, Paper No 3.27.

Photographs

166 m high L-L Dam at north end of tailings facility.

Upstream cyclone sand cell construction at the L-L Dam.